

ART. IV.—*The Antiquity of Man in Victoria.*

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I.—INTRODUCTION.

At the end of a paper on the geology of Mount Macedon, read before this Society in 1901, I expressed the view, which seemed to me the general belief in Victoria, that man witnessed the last of our volcanic eruptions. "It is not improbable," the paper concluded, "that Mount Macedon is one of the volcanic piles that mark the beginning of the great period of volcanic activity, of which the last eruptions built up still-existing craters, and are recorded in the legends of the Victorian aborigines."¹ I had not then had time to consider the evidence critically; but it seemed to justify the current opinion, that the human occupation of

¹ The Geology of Mount Macedon, Victoria. Proc. Roy. Soc. Vict., vol. xiv., n.s., 1902, p. 214.

Victoria dated from the volcanic period. The evidence quoted in support of this belief was the occurrence of human implements below the lavas, and upon the existence of aboriginal traditions of the eruptions. Since then I have had time to go into the evidence, and am forced to abandon the opinion then accepted. Some of the grounds for this change of view are briefly stated in the *Geography of Victoria* (p. 51), but, as the subject is of much interest, the arguments may be conveniently restated at greater length, in the hope of thereby bringing forth any convincing evidence to the contrary that may be available.

II.—REPORTED HUMAN RELICS OF THE VICTORIAN VOLCANIC PERIOD.

The most reliable evidence of the existence of man in Victoria, at the time of the last volcanic eruptions, would be the occurrence of stone implements or of human remains in beds interstratified with or below the volcanic rocks. Evidence of this nature has been adduced; but its reliability is doubtful. Some of it may be dismissed very summarily. Thus, an aboriginal canoe is said to have been found in one of the deep leads under the basalts of Mount Tabletop in Dargo. Mr. Stanley Hunter, of the Geological Survey, informs me that this canoe was an ironstone concretion; its shape, from his description, was that of the bow of an English canoe (of the Rob Roy type), and did not resemble the aboriginal Victorian canoe. This concretionary canoe has found its way into our literature. Further evidence that may be as readily disposed of is that of the reported aboriginal camp fires under the Melbourne lava flows, at the Corporation Quarries in Collingwood. On enquiry at the quarry, I was told that the reports of the aboriginal fire-places were based upon a practical joke. Whether this be so or not, the evidence has not been formerly recorded or described, and is at present merely hearsay.

1. *The Buninyong Bone*.—The most definite evidence in favour of the existence of man, earlier than some of the basaltic lavas, is a cut fragment of bone, found near Ballarat, in a bed of silt, which lies beneath a sheet of basalt, formed as one of the south-western flows from Mount Buninyong. The specimen belongs to the Museum of the Ballarat School of Mines. The

geological situation in which this bone was found has been carefully described by Mr. T. S. Hart,¹ of the Ballarat School of Mines, and the bone by Mr. de Vis.² Its interest, as Mr. de Vis states, is due to the fact that "on its posterior face the rib had been half sundered by a cut through its dense cortex."

The bone is a fragment of the rib of some giant marsupial, and corresponds precisely, according to de Vis, with *Nototherium mitchelli*. The fragment is 6 inches long. Part of the edge has been split off, and the bone has been thus reduced in width to $1\frac{2}{3}$ inches. The bone is roughly fractured at one end and along one side. The face has been flattened in two places by abrasion, and at one end there is a long, sharp straight cut. Mr. de Vis considers the possibility of this cut having been made by the teeth of some animal; but the only animal that, as he says, could even excite suspicion, is the marsupial Lion, *Thylacoleo carnifex*. There is no reason to consider that this animal could have made such an incision; the bone does not appear to have been gnawed, and those who have recently examined the bone generally agree that the cut must have been made by a sharp metal implement. The smooth surface was not likely to have been made by rubbing down, because the opposite side of the bone projects with a jagged broken edge, which would have been worn down at the same time. The bone has been pyritized; therefore, to preserve it from decay, it has been sized and varnished, so that the freshness of the cut cannot now be determined.

That the bone originally came from the swamp deposit below the lava flow seems to me almost certain, for the head of the same rib was found accompanying it. So far as I know, there is no deposit of fossil marsupial bones near Buninyong, whence the bones could have come. There is no special reason to regard the specimen as having originated as a joke or fraud. It was handed by the workmen who found it, to the manager, Mr. Kent, who gave it to one of the directors of the mine, Mr. W. R. Vale, who in turn handed it to Mr. Hart. Mr. Kent has made a statutory declaration that he received the bone, covered with dirt, with

1 Hart, T. S.: "The Bone Clay and Associated Basalts at the Great Buninyong Estate Mine." Proc. Roy. Soc. Vict., vol. xii., n.s., Melbourne, 1899, pp. 74-80.

2 de Vis, C. W.: "Remarks on a Fossil Implement and Bones of an Extinct Kangaroo." Proc. Roy. Soc. Vict., vol. xii., n.s., Melbourne, 1899, pp. 81-90, pl. vii.

others, found at the same place, from the workmen; and that he handed it in that condition to Mr. Vale. Mr. de Vis seems to have been very suspicious of the specimen at first, when he found that with a penknife, from a similar piece of *Nototherium* rib, he could carve a very fair imitation of the fossil. But his suspicions were overcome by the assurances that he received, and he concluded that the bone received its present shape from the hands of man, before it was buried 238 feet below the present surface of the ground.

If this bone had been cut to its present form by man, before it was dropped in the swamp deposit, then man must have been contemporary with some of the Victorian volcanic eruptions. The geological evidence is conclusive that the swamp deposits, in which the bone was buried, were earlier than the overlying basalt flow from Mount Buninyong. The cut on this bone is regarded as of human origin by, so far as I know, all those who have carefully examined it, and there is no special reason to doubt the genuineness of the discovery, or the good faith of the men who found it. Nevertheless, faith in this implement is not so general as I at first believed. It has recently been carefully examined or re-examined by Professor Spencer, Mr. Kenyon, and Mr. T. S. Hall. They allow me to say that they discredit it as proof of the great antiquity of man in Victoria. Mr. de Vis tells me in a letter that "with regard to the scraper, when I wrote 'if an implement' I did not intend to imply that it had not been fashioned by the hand of man, for this I believe it to have been (so does Professor Yashenko to whom I showed a cast), but that there lingers in my mind some doubt, whether it was formed before burial or after resurrection. I confess, the doubt arises purely from negative evidence, the absence of signs elsewhere of man in competition with the great marsupials."

Mr. Howitt tells me that "I do not rely upon the discovery of the bones in the Buninyong Mine or the apparent artificial cuts in them;" and reference to his address to the Australasian Association for the Advancement of Science, in 1898, shows that he even then regarded the evidence of the specimen with considerable suspicion.

I have had the opportunity of showing the specimen to Mr. A. S. Kenyon, whose experience of the stone and bone imple-

ments of the Victorian aborigines is probably unequalled. He tells me that the Buninyong bone is unlike any Victorian stone or bone implement that he has seen, and that he thinks it must have been cut by a sharper implement than any which the aborigines had. He is emphatic that the work upon their bone implements was quite different in character.

The fact that the head of the same rib was found in the same group of bones tells against the bone having been fashioned as an implement. It is possible that an aboriginee may have started to make a bone scraper and not have finished it, and have knocked off the head of the rib at the place where he left it. But it is more probable that the bone would have been cut before being carried into the swamp, and the broken pieces would not have been found lying beside it, unless it had been fractured after burial.

The main evidence against this bone having been cut by aborigines is that the workmanship is not of the type they used. No known Victorian aboriginal bone has been found with such a cut. The jagged edge projecting beside the smooth cut surface would have rendered it useless as a scraper; but even if the specimen had been cut as such, it is improbable that the head of the rib should have been found beside it. Hence the general evidence forces me to conclude that we cannot accept the high antiquity of man in Victoria on the evidence of this bone alone.

It is also significant that nothing else that could be regarded as a trace of man was found in the same bed. There were no worked stone flakes, and in no other Victorian locality, where the remains of giant marsupials occur, is there evidence of the contemporary existence of man. It may be claimed that the existence of one definite specimen is sufficient to settle the question. But bones can be cut by carnivorous mammals, such as the *Thylacoleo carnifex* and the dingo, which both lived in Victoria at the same time as the giant marsupials. I fully agree, however, with Mr. de Vis that this cut was not made by the teeth of any animal, as it appears to be due to a sharp cutting tool. I am not prepared to offer any positive opinion as to how this bone was cut, any more than I am prepared to explain how the Calaveras skull was buried in California, or what particular mistake led to the genuine belief, in the eighteenth century, that a whaler, Captain Johnson, had got within two degrees of the North Pole.

It seems to me possible that the specimen is the result of an accident, for the shovel of one of the workmen might have cut into the bone and broken it while it was lying in the silt; the shovel, at the same time, may have driven mud into the cut surface, and thus have hidden its recent formation.

In dealing with fossil traces of man, the evidence of a single specimen, which was not collected *in situ* by a collector of known trustworthiness, must always be received with caution. The chance of genuine mistake and of practical joke must not be forgotten. The literature of the antiquity of man contains many warnings against founding important conclusions upon single specimens, brought into court by men who were not trained geologists. And in this case there is the additional need for caution in that the bone does not resemble those of our aborigines, and that it would appear to prove not only a great antiquity for man in Victoria, but also that these early men were provided with metal tools.

Accidents are apt to occur in the burial of human implements, and casual specimens must be regarded with reserve. There is, for example, the case of the discovery of some recent keys on a beach near Geelong under fifteen feet of drift. This discovery was reported by the first Lieutenant-Governor of Victoria, C. J. Latrobe,¹ and considered by him to prove a recent elevation of the sea in that district. Rawlinson discussed the evidence, and concluded that the keys had been left by buccaneers two or three centuries before.²

2. *The Maryborough Implement*.—Another supposed ancient implement associated with our volcanic rocks was found at Maryborough in 1855, at the depth of four feet from the surface. The specimen was found in the gravels of a small tributary, and not below the basalts of the main lead. Mr. Stanley Hunter, of the Mines Department, was sent, at the request of Mr. Howitt, to examine the locality; and on asking Mr. Hunter for information, I find he attaches no reliance to the evidence. The specimen at best only came from a shallow deposit, and the alleged implement may have fallen into a natural hollow or wombat hole.

1 Rawlinson, T.: "Notes on the Discovery of some Keys in the Shore Formation of Corio Bay, near Geelong." Proc. Roy. Soc. Vict., vol. xii., Melbourne, 1876, pp. 33-43.

2 Rawlinson: *Op. cit.*, p. 40.

If we are to carry man back to the antiquity of any deposit, in which one of his implements has been found, we might claim that he dates, in Victoria, from Miocene times. During one of the excursions of the Geology School of the University, Mr. D. J. Mahony found a bone implement in the Middle Kainozoic marls at Waurn Ponds. I was present when the specimen was found, and it was unquestionably obtained *in situ* from the marl, and was unquestionably an aboriginal implement. Subsequently, however, I found that the specimen was of the type known as a bone pointer. Such implements were used to injure an enemy by witchcraft. A sharply pointed piece of human bone was pointed at an enemy, while various incantations were repeated; the bone was then buried in the ground, whence, according to the aboriginal belief, it would make its way into the body of the person at whom it had been pointed. When I found out the nature of this implement its occurrence in the marls was easily explained. The tribe which lived at Waurn Ponds must have practised this rite; and the bone was pushed into the ground at a point where the marls were exposed on the surface; and thus it was found in a very old deposit which showed no obvious sign of disturbance.

III.—THE DISTRIBUTION OF ABORIGINAL REMAINS IN SUPERFICIAL DEPOSITS.

The Buninyong specimen is unique, as it is the only one that is connected with our volcanic rocks, although aboriginal implements have been found in Victorian gravels of some antiquity. But, their evidence is equally unsatisfactory. Our gravels have been turned over so often, that specimens lying on the surface may easily have been buried in old gravels and then re-discovered. There are, however, no cases of undoubted implements found in ancient gravels, which require explanation by this hypothesis. The Ballarat implement, quoted by Dicker's Mining Record,¹ is the best I have come across, which even suggests the occurrence of man in the early Pleistocene gravels. This specimen was a stone basalt axe, 5 lbs. in weight, 8 inches long, and 4 inches in greatest thickness; it is

¹ Ancient Mining Tools: Singular Discovery of a Stone Implement or Weapon at Ballarat. Dicker's *Min. Rec.*, vol. iii., 1864, pp. 120-121.

grooved, showing that it was mounted in a handle. It was found in gravel at Ballarat when digging a garden trench, at the depth of twenty-two inches from the surface. There is nothing in this case to prove any great antiquity for the maker of this axe.

The old surfaces on the coastal dunes offer perhaps, the best chance of definite evidence as to the antiquity of man in Victoria. These dunes have been accumulating since early Pleistocene, or perhaps even Pliocene, times; the aborigines frequented these dunes, as they provided excellent camping grounds, and the shores yielded an abundant supply of shell fish and other food. The old camps on the dunes, when exposed by the wind, afford the richest collecting grounds of Victorian aboriginal remains. Stone flakes, ovens and kitchen middens are abundant and conspicuous. But the lower dune surfaces, some of which, judging from general geographical considerations, are probably only 300 or 400 years old, are quite bare of human remains. We find aboriginal kitchen middens extending for miles along the cliffs; but they are all superficial. The older dune surfaces would no doubt show similar kitchen middens had the natives lived on them. But they show no trace of man.

There are records of human specimens having been found in the sand dunes; as by Wilkinson in 1864 near Cape Otway, and Mr. Robert Etheridge, junr., who subsequently obtained a bone spike at the same locality. Messrs. David and Etheridge record both discoveries, and remark that the "remains of this nature, lying as they did beneath sand dunes at least 200 feet high, must have been of great antiquity."¹ This evidence is weighty; but it must be remembered that the record of Wilkinson's discovery appears to rest on hearsay evidence, and Etheridge's original description of his discovery is less emphatic. He remarks that his specimen was found in "a mixture of beach material, pebbles, humus, and broken shells, resting on the carbonaceous sandstone forming the high cliffs of the Cape, and *apparently* intermediate between it and the outlying dunes."² Considering

1 David and Etheridge: "Report on the Discovery of Human Remains in the Sand and Pumice bed at Long Bay, near Botany." Records Geol. Survey, N.S.W., 1889, vol. i., pt. I., p. 15.

2 Etheridge, R., junr.: "Observations on Sand-dunes of the Coast of Victoria." Proc. Roy. Soc. Vict., vol. xii., 1876, p. 4.

the rapidity with which sand dunes travel, it appears quite possible that these implements were buried by an advancing dune, and need not imply any vast antiquity. It is probable that the layer with the broken shells was only the surface layer on the dunes, resting on the underlying sandstones on the edge of the dune.

Further striking negative evidence is given by the bone beds beside Lake Kolungulac, and elsewhere in the Hampden basin; they contain bones of the giant marsupials, and if the aborigines then lived in Victoria, they would surely have gone to those localities to obtain food. So far no worked flakes have been found in association with these bones, and none of the bones show any signs of having been cut or broken by the aborigines.

Again, the dunes beside the lakes on the western plains have heaps of kitchen midden material. They only occur on the surface. Sections have been cut in all directions through the dunes, but none of these conspicuous hummocks of rubbish have been found at any depth that would imply any considerable antiquity. The quarries at Mount William, near Lancefield, worked by the aborigines for the stone used for their greenstone axes, are all small and shallow, and no great amount of stone has been removed from them.

Negative evidence has, of course, to be accepted with reserve, but it is unusually weighty in regard to the age of the Australian aborigines. The stone flakes, which they used, are almost indestructible; and they are scattered with extravagant untidiness about the aboriginal camps, where chipped stones can be collected by the bushel. The sites of the recent aboriginal camps in the Lake Eyre district, and of the earlier aborigines in Victoria, are marked by large quantities of these implements. Polished aboriginal axes are scarcer, but they also have been found widely scattered over the surface of Victoria. Accordingly, if aborigines lived long ago in Victoria, we ought to expect an abundance of their stone implements in the beds then being deposited. Excellent sites for former camps can be easily found. The "false bottoms" or "cement floors," which occur in our alluvial deposits, would have formed admirable camping grounds, and hundreds of acres of these floors have been cleared by mining operations, and the surfaces searched by our keen,

sharp-sighted miners. In no country in the world have the gravels been searched so thoroughly, or are there such extensive exposures still open, as in Victoria.¹ The gravels, moreover, have been searched by highly intelligent observers, many of whom were keenly interested in the aborigines, and on the lookout for any traces of them. It is almost inconceivable, if man had been living at the time when these gravels were being laid down, that worked flakes and stone and bone implements should not have been discovered.

The absence of traces of aboriginal man, except from the most superficial and recent deposits, is admitted by all Victorian collectors. This fact is emphatically asserted by Brough Smyth. He concludes: "It is remarkable that no stone hatchet, chip of basalt, or stone knife has been found anywhere in Victoria, except on the surface of the ground or a few inches beneath the surface. It is true that fragments of tomahawks and bone-needles have been dug out of Mirrn-yong heaps on the sea-coast, covered wholly or partially by blown sand; but, though some hundreds of square miles of alluvial have been turned over in mining for gold, not a trace of any work of human hands has been discovered. Some of the drifts are not more than three or four feet in thickness (from the surface to the bed-rock), and the fact that no aboriginal implement, no bone belonging to man, has been met with is startling and perplexing."² This fact is still more striking now than it was in 1876, for it has been confirmed by subsequent work. Thus Mr. W. H. Ferguson, an enthusiastic and thoroughly reliable collector of aboriginal flakes, states that the deepest level at which he has found any has been the depth of 12 feet, in some of the Murray silts, near Talgarno. These silts accumulate very rapidly, and the banks of the Murray were probably the first Victorian locality at which the aborigines camped. There is nothing in these 12 feet of silt indicating any considerable antiquity. Mr. Kenyon, the most experienced Victorian collector of aboriginal implements, tells me he has never found them except close to the surface. He has

1 The parts of Victoria which should be excepted from this statement are the province of Croajlong in the extreme east, and parts of the Mallee country in the extreme north-west.

2 Brough Smyth.

indeed found skeletons in three distinct layers in the shifting sand dunes of the Lower Loddon; but these dunes accumulate so rapidly, that the deepest skeleton need not be more than a few centuries old.

The lack of aboriginal implements from our gravels, dunes, river silts, and volcanic rocks gives very weighty evidence that man was not present in Victoria during their formation.

IV.—SUPPOSED ANCIENT HUMAN IMPRESSIONS IN “WARRNAMBOOL SANDSTONE.”

Considerable attention has been recently called to a slab of dune limestone containing some well-marked impressions, now in the Warrnambool Museum. The rock is generally known by its local name of “Warrnambool Sandstone.” It was clearly formed in dunes, composed of shell-sand and foraminifera, the grains of which have been cemented into a coherent rock. The face of the slab represents the false-bedded surface on the slope of the dune. On the slab there are, side by side, two broad, smooth depressions. One margin of each is preserved, and is a regular, open curve; the two depressions are separated by a ridge of $\frac{7}{8}$ of an inch in width. In front of one of the depressions are two deep imprints, as if made by a pair of feet.

The following interpretation of the specimen is attached to it in the Warrnambool Museum:—“The imprints upon it are those of a woman and a man who, during the geologic period, at the time when the slab was loose sand forming part of the ancient hummock or sand dune similar to those found around our coast at the present, were sitting side by side at its foot. Two footprints on the left side, longer and wider, evidently those of the man, were taken away and built into the walls of the Town Hall.”

The label gives not an unnatural explanation of the impressions on this slab. The human origin of the imprints has been affirmed by Mr. Graham Officer,¹ who first described them; by Archibald,²

1 Officer, C. G. W.: “The Discovery of Supposed Human Footprints on Aeolian Rock at Warrnambool.” *Vict. Nat.*, vol. ix., 1892, pp. 32-39.

2 Archibald: “The Discovery of the most Ancient or Tertiary Men in Australia;” *Science of Man*, vol. i., No. 2, n.s., pp. 40-41, Sydney, 21st March, 1898. See also “Further evidence to establish discoveries in Warrnambool quarries;” *Ibid.*, vol. i., No. 4, pp. 86-7, Sydney, 21st May, 1898. “The Palaeolithic Men in Tasmania and Australia;” *Ibid.*, vol. ii., No. 2, n.s., p. 30, Sydney, 21st March, 1899. “The Relics of Primitive Men found in Australia;” *Ibid.*, vol. ii., No. 2, n.s., pp. 32-33, Sydney, 21st March, 1899.

formerly curator of the Warrnambool Museum; his successor, Mr. Jas. McDowell,¹ and Mr. A. C. MacDonald.² This hypothesis is discredited by Messrs. T. S. Hall, W. Howchin, E. F. Pittman, R. Etheridge, G. B. Pritchard, T. S. Hart, J. Dennant, J. Stirling, and A. W. Howitt,³ some of whom, however, have not seen the specimen. If the impressions are aboriginal footprints then man must have been in the Warrnambool district a considerable period ago. According to E. D. Cooke, in a handbill, printed at Essendon, 21st January, 1892, this specimen proves man to be of Pliocene age in Australia. There is no need to go as far back as that, for there is no evidence that the rock is of Pliocene age.⁴ Only one fossil bone, as far as I know, has been found in this formation, and that gives no evidence that the rock was deposited at the time of the giant marsupials.

The Warrnambool dune limestones are some 70 feet thick; and they must have taken centuries, probably many centuries, to accumulate. The slab with the impressions was found in Kellas' quarry, in section 24 of allotment 28, in the Borough of Warrnambool. This position is in the heart of the dune limestones, which extend for a little more than half a mile both to the south and to the north, as well as for a considerable distance east and west. The slab was dug up at a depth of 54 feet from the surface, and therefore comes from the lower part of the limestone series. The position of the quarry renders it improbable that this slab could have been formed at the close of the dune series, on the flank of the main mass of the formation. The rock was found on the 5th December, 1890, and was promptly given to the Museum. Unfortunately it is an especially friable variety of "Warrnambool sandstone," and all the original surface of the imprints has crumbled away. Mr. McDowell, the curator of the Museum, says that he was told that the imprints were lined by a

1 McDowell, James: "Footmarks in Rocks." *Ibid.*, vol. ii., No. 2, n.s., p. 216, Sydney, 21st December, 1890.

2 MacDonald, A. C.: "Alleged Traces of Primitive Man." *Austral. Min. Stand.*, vol. xxxi., 1904, p. 274.

3 *Ibid.*, pp. 230-231, 273-274.

4 See for example, Pritchard, G. B.: "The Sand Dunes of the Coast." *Geelong Naturalist*, vol. iv., No. 3, March, 1895, pp. 43, etc.

thin clayey layer, as if the people who made them had had muddy feet. The material that filled the cavities is said to have come away on the under surface of the overlying slab.

This slab is not convincing. The flat, smooth depressions look not unlike those that would be formed by a naked person sitting on the sand; but if so, the proportions between the width of his buttocks and the width of his feet (3 inches) were abnormal. It is therefore held that the impressions were made by two persons sitting side by side; and Mr. McDowell tells me that a slight ridge once marked the division between the buttocks on the larger impression, but it has since crumbled away. If the two depressions are to be regarded as having been made by two naked people sitting on the sand, the slab does not seem to me to look like it. The interval between the impressions is only $\frac{7}{8}$ of an inch, which is too little. It is accordingly explained that the man got up first, and that the woman moved slightly to her left as she rose, and thus caused the narrowness of the ridge. One would have expected that the regularity of the curve of the impression left by the man would have been marred by the same movement.

The supposed buttock impressions may be such, but they may be merely hollows formed by wind eddies. How the supposed footprints were formed I have no definite opinion. They look more like the impressions that would be left by booted, than by naked, feet; and Mr. McDowell tells me that such is the general opinion of those who have examined the specimens. It has indeed been suggested that they were made by some early explorer who landed on this coast. The width of the footprint seems to me too uniform to have been made by a naked foot; the cavity is deepest at the toe end where the foot should have made a much wider impression than at the heel. The greater depth of the front of the footprint seems to me improbable in the case of footprints made by people descending the steep slope of a loose dune. I have had some practice in following the footprints of East African negroes, and these marks do not appeal to me. They seem to me unlike naked footprints, but to resemble a careless man's idea of what human footprints would be like.

If this slab be evidence that aboriginal man lived in Warrnambool at the time that the lower beds of the Warrnambool sand-

stone were being laid down, I think it is also evidence that those people wore a modern type of boot. In that case Professor Spencer's view that the Australian aborigines show no signs of degeneration will have to be seriously reconsidered.

V.—TRADITIONS OF THE VICTORIAN ERUPTIONS.

Aboriginal traditions, however, are quoted in support of the view that man was contemporary with some of the Victorian volcanic eruptions. It is stated that the aborigines reported that various rocks, now lying on the surface of the ground, were thrown from the adjacent volcanic hills. This tradition is quoted in reference to Mount Buninyong, near Ballarat.¹ Mr. T. S. Hart tells me that an old resident in the Western district, who arrived there in 1847, but who is now dead, told him the same about Mount Elephant. Again, Mount Leura, according to a tradition current in the Camperdown district, was built up of material thrown out of the basins of Lakes Bullenmerri and Gnotuk.

One of the most authoritative of these traditions is recorded by Dawson.² "Some names of places indicate the existence of heat in the ground at a former period; but no tradition exists of any of the old craters, so numerous in the Western District, ever having thrown out smoke or ashes, with the exception of 'Bo'ok,' a hill near the town of Mortlake. An intelligent aboriginal distinctly remembers his grandfather speaking of fire coming out of Bo'ok when he was a young man. When some of the volcanic bombs found among the scoriae at the foot of Mount Leura were shown to an intelligent Colac native, he said they were like stones, which their forefathers told them had been thrown out of the hill by the action of fire."

Mr. J. Parker tells me that the aboriginals of the Loddon tribe (the Ja-jow-er-ong, or Jajauwuring according to Mr. Howitt's spelling) had a similar story about Mount Franklin; and from the account it appeared to have been in eruption about

¹ *E.g.*, A. W. Howitt: "On the Origin of the Aborigines of Tasmania and Australia." Austral. Assoc. Adv. Sci., vol. vii., Sydney, 1898, p. 753.

² Dawson, James: "Australian Aborigines, the Language and Customs of several Tribes of Aborigines in the Western District of Victoria, Australia," 1881, pp. 101-2.

200 years before 1830. The crater is occupied by a gum forest and the size of some of the trees would alone throw some doubt upon that date; and Mr. Parker says that the tradition was so vague and uncertain, that both he and his father (who was the official Protector of Aborigines, in charge of the Aboriginal Station at Mount Franklin), thought it was based on an inference from the shape of the crater, and was no proof that man had seen it in eruption. This legend is, however, the most realistic that has reached me; for the aborigines are said to have blown the bellows of the blacksmith's forge, and declared that was how the mountain went in the time of their forefathers.

These traditions appear, at first sight, to show that the aborigines had some knowledge of the eruptions from the now extinct volcanoes. When this evidence is examined more closely, however, its value appears less. It is all very uncertain. These traditions are vague and indefinite; and they have been recorded only from memory, mostly at second or third hand, long after they were heard. They are now little more than traditions of traditions, and are much less graphic than the aboriginal account of earthquakes.¹ Either the traditions themselves or the accounts of them are contradictory. Thus, Dawson says there was one about Mount Shadwell, and denies that there were any regarding Mount Elephant or Mount Leura; and had there been any such, he no doubt would have known of them.

VI.—THE EVIDENCE OF ABORIGINAL NAMES OF EXTINCT CRATERS.

If the aborigines had seen any of the mountains in eruption, they would probably have given them names which indicated something to do with fire or smoke. It is difficult now to learn the aboriginal place-names and their meanings. Most of the existing vocabularies of the Victorian aborigines were collected by untrained men, who had inadequate knowledge of the native language, and generally recorded the words from memory, spelling them on no definite phonetic system. Such evidence as we have, however, does not connect the names of any of the Victorian

¹ Dawson: *Op. cit.*, p. 102.

craters with volcanic phenomena. The word Fire, among the aborigines, is given by Brough Smyth as Towera,¹ which Mr. Howitt spells Taura. The word for Fire, most widely distributed in Victoria, occurs as Wee, Wein, Ween, Whean, Weeing² and Weenth,³ and even Wanyap.⁴ This word is not used for any of our extinct volcanoes, even when there are said to be aboriginal traditions of their activity. Toong,⁵ the word for smoke among some of the western aborigines does not appear in connection with the craters; but Towera does occur in the native name Kutbuntaura, on the Macallister River, above Glenfallock, which, however, is not of volcanic origin. Boort, another term for smoke, is a well-known place-name, but, so far as I know, is not used for any volcanic crater. There are statements, however, connecting the names of some craters with fire; thus, Bonwick⁶ says that Koroit, the aboriginal name of Tower Hill, one of the most recent of Victorian volcanoes, means "fire." He gives no authority for this meaning, and Brough Smyth's informants variously give the name as Koritch, a small fish,⁷ Korite, a "large male kangaroo,"⁸ or as "the male kangaroo."⁹ Koroit is also interpreted as nettles.¹⁰ The native name of Mount Elephant, which also has traditions connecting it with eruptions, is said by Brough Smyth to be Tirrenchillum or Tarrinallum, and to mean a "hill of fire."¹¹ I was informed locally that the name Terrinallum or Djerrinallum¹² means the "tern," flocks of which lived on the plains around the mountain; and, as I have already remarked, according to Dawson, the natives had no tradition of any eruptions of Mount Elephant. Dawson's definite statement that the aborigines of the Camperdown district connected Mount Shadwell only, with volcanic action, seems to me to outweigh

1 Smyth, Brough: "The Aborigines of Victoria," vol. i., London, 1878, p. 458.

2 Smyth. *Op. cit.*, vol. ii., pp. 12, 13, 83, 85, 86.

3 Bunce, D.: "Language of the Aborigines of the Colony of Victoria," Geelong, 1859, p. 17.

4 Smyth, Brough: "The Aborigines of Victoria," vol. ii., p. 10.

5 Curr, E. M.: "The Australian Race," vol. iii., 1887, pp. 491-493.

6 Bonwick, James: "Western Victoria," Geelong, 1858, p. 62.

7 Smyth, Brough: "The Aborigines of Victoria," vol. ii., p. 186.

8 Smyth: *Op. cit.*, p. 213.

9 Smyth: *Op. cit.*, p. 210.

10 Gregory, J. W.: "Teaching of Geography," 1902, p. 50.

11 Smyth, Brough: "The Aborigines of Victoria," vol. ii., p. 214.

12 Gregory. *Op. cit.*, p. 49.

the vague secondhand reports connected with Mount Elephant and Mount Leura; for Dawson is probably the best available authority for the aborigines of that district. Dawson did not know the meaning of the name Bo'ok,¹ which is given by Brough Smyth as Poork or Porrhuc, and it is said to mean "a cold in the head,"² probably implying that the mountain was as cold and bleak, when it was first named by the aborigines, as it is now. That Mount Shadwell was the last volcano in its district in eruption is geologically improbable; for it looks much older than the craters of Mount Noorat, respecting which there are no traditions.

The meaning of the names of extinct craters always seems to imply that the hills were in much the same condition when they were named by the aborigines, as they are to-day. Thus Mount Leura, or Lehuura, is said by Dawson³ to mean "nose," referring no doubt to the shape of the denudation curve of the northern face of the mountain. Mount Buninyong is said⁴ to mean the "knee hill," from "bunin"—knee, and "youang"—a hill; the latter term is familiar in the name of the You Yangs, and occurs with the Loddon tribe under the form of Yon-arg, a hill.⁵ The name Buninyong was apparently given to the hill from its resemblance to the bent knee of a man lying on his back. This fact indicates that Buninyong was in its present, worn down, denuded condition, when the aborigines named it.

Mount Warrenheip, east of Ballarat, is said to mean emu feathers, and was given from the feathery aspect of the tree ferns that flourished on the slopes of the hill. The term again suggests that the volcanic fires had been extinct, and that the mountain was covered with vegetation when the aborigines first knew it.

VII.—THE TRADITIONS AND GEOLOGICAL EVIDENCE.

Another strong argument against the historic value of these traditions is that they do not agree with the geological evi-

1 Dawson, James: "Australian Aborigines, the Language and Customs of several tribes of Aborigines in the Western District of Victoria, Australia," 1881, p. 79.

2 Smyth, Brough: "The Aborigines of Victoria," vol. ii., p. 214.

3 Dawson, James: "Australian Aborigines," p. 80.

4 Withers, W. B.: "History of Ballarat," 1870, p. 10.

5 Smyth, Brough: "The Aborigines of Victoria," vol. ii., p. 162.

dence, for they do not refer to the craters which were last in eruption. Thus, Mount Leura is probably older than some other mountains in the same district, e.g., than Mount Noorat, of which the crater is perfect. Accordingly one would expect, if there were any reliable aboriginal traditions of volcanic action in the Camperdown district, that they would refer to Mount Noorat, rather than to Mount Shadwell, Mount Elephant, or Mount Leura. Warrenheip is in a much better condition of preservation than Buninyong; its crater walls are far more perfect, and as the two mountains are equally exposed, Warrenheip was probably in eruption much the later. Traditions of volcanic activity in the Ballarat district should refer to Warrenheip rather than to Buninyong.

The origin of these traditions is easily explained without accepting them as historic. Some of the Victorian craters resemble the form of the aboriginal ovens; the vesicular basalts look like cinders, and burnt, carbonized tree-stems occur in the lava flows. The igneous origin of the mountains would be obvious to even less keen observers than the Australian aborigines. Moreover, the people who asked the aborigines as to the former eruptions from the mountains, probably put leading questions, and may thus have themselves originated the traditions. The aborigines had many legends, which no doubt arose from the endeavour to explain natural objects. The traditions that stones lying about Buninyong and Mount Elephant have been thrown from the craters is not an unnatural invention to explain the occurrence of the numerous volcanic bombs on their flanks. The folk-lore of most nations contains legends of stones being thrown to their present positions by giants, or by the elements in fury. Thus, the hills of liver-coloured quartzite, near the end of Lake Eyre, are reported to be the liver of one of the Mura-mura, the legendary giant forerunner of the present aborigines. This Mura-mura was dying and was harassed by dingoes, and in his agony he tore out his liver and threw it away. The idea that these hills had been thrown where they are was, to the aborigines, the easiest method of explaining their existence. If these hills had been composed of volcanic materials, instead of quartzite, the legend might have been quoted as proof that the aborigines witnessed the eruption.

The legend that Mount Leura is the heap of material thrown out of the two adjacent lake basins, would be so incorrect as a matter of fact, that it tells against the idea that the story was based on observation. The form of the two basins suggests that they were formed by subsidence and not by explosion; but it was only natural for the aborigines to regard them as excavated, and to attribute the nearest hill to the material obtained therefrom.

VIII.—TRADITIONS OF GEOGRAPHICAL CHANGES.

Suggestions of the antiquity of man in Victoria, based on aboriginal knowledge of geographical changes, are equally uncertain. The former occurrence of sharks in the Mitchell River,¹ or the former full connection of Lake Tyers with the sea, and other similar reports, only indicate comparatively slight changes, and no long lapse of time. The strongest evidence derived from geographical changes is that adduced by Mr. Howitt in his argument that man crossed from Victoria to Tasmania before the formation of Bass Strait²; but his general arguments, though weighty, are themselves indirect, and do not seem adequate to counterbalance the overwhelming geological evidence in favour of the separation of Tasmania long before the possible arrival of man.

IX.—THE POSSIBLE OCCUPATION OF VICTORIA BY A PRE-ABORIGINAL RACE.

The weakness of the traditional evidence would not, however, alone be conclusive against the Buninyong implement having been cut and buried by aboriginal man; for the traditions of the late Victorian aborigines is only evidence of the condition of Victoria since their entry. There may have been an earlier race, whose legends and place-names died with them. The possible occupation of Victoria by a pre-aboriginal race, which may have been contemporary with the volcanoes, has one consideration in its favour. The theory of the origin of the Australasian aborigines which appears to be now generally accepted, is that they

1 Howitt, A. W. : "Notes on the Geology of Part of the Mitchell River Division of the Gippsland Mining District." *Prog. Rep. Geol. Surv. Vict.*, No. 2, 1874, p. 70.

2 Howitt, A. W. : *Add. Austral. Assoc. Adv. Sci.*, vol. vii., Sydney, 1898, p. 755.

were originally a negroid race, of which the Tasmanians are the only historic representatives. It is thought that the members of this race crossed Australia as far as Tasmania, wherein some of them were isolated by the formation or enlargement of Bass Straits. Australia was then invaded by a race of black Caucasians, who intermixed with the negroid occupants of the continent, and the Australian aborigines were the offspring of this mixture. The negroid people were thus replaced in Australia, but survived in Tasmania. According to this theory we should expect Victoria to have been occupied by members of the primitive Tasmanian race, which became extinct long before the arrival of the recent aborigines. Hence, men of the Tasmanian race may have lived during the volcanic period, and yet all traditions and place-names founded on the eruptions may have been lost. If the aborigines had overlapped with the Tasmanian people, the few doubtful traditions previously quoted, might be regarded as the distorted fragments of information, which the present aborigines obtained from their predecessors.

We have, therefore, to consider whether the Buninyong implement, for that is the only one worth considering, may have belonged to a pre-aboriginal Tasmanian race. The Tasmanian stone implements were of a ruder type than those of the Australians; they were merely chipped and never ground, and apparently they were not used in handles. From their shape they have been described by Professor E. B. Tylor as quasi-palaeolithic. Mr. Kenyon tells me that, though he has searched carefully in the hope of finding beds in Victoria containing only roughly chipped implements, which cannot be distinguished from those made by the Tasmanians, he has found none.

The only area on the mainland of Australia, where implements occur which resemble the Tasmanian, is in Westralia. Thus, according to Brough Smyth, the typical implement in that area "is ruder in its fashioning, owing principally to the material of which it is composed, than even the rude unrubbed chipped cutting-stones of the Tasmanians."¹ Professor Tylor² and Mr.

¹ Smyth, Brough: "Aborigines of Victoria," vol. i., London, 1878, p. 340.

² Taylor, E. B.: "On the Survival of Palaeolithic Conditions in Tasmania and Australia." Brit. Ass. Adv. Sci., 1898, p. 1015.

A. Morton, of Hobart, have re-asserted this similarity in the case of the implements from the Murchison district of Westralia.

The Western Australian implements, though rough, were mounted in wooden handles, a device the Tasmanians apparently did not know; and the Western Australian aborigines who used the roughly chipped stones, had other implements better than those of Tasmania. The roughness of these unchipped Westralian stones does not prove any direct affinity between their makers and the Tasmanians. There is indeed no geological evidence of the passage of the Tasmanian race across Victoria; and certainly the Buninyong bone gives none, for it is of a more advanced, rather than of a simpler type of workmanship, and the Tasmanians apparently did not use bone implements.

Mathew¹ has made the interesting suggestion that the stories of Looern, the wild man of the Hoddle Range, north of Wilson's Promontory, and of Wiwonderer, the man-like animal, with a body as hard as stone, who lived on the Bass Range, east of Western Port, may be based on some of the last Tasmanian survivors on the mainland. If so, then layers with implements, all of the roughly chipped Tasmanian type, should be found in that district. But so far I know of none; on the contrary, the implements I have seen from Wilson's Promontory, and near Foster, are above the average workmanship of Victorian stone implements. Geological evidence so far gives no positive evidence as to the route by which the Tasmanians reached their island home. There is one area in Victoria, the Gippsland Lakes estuary, which has formed by subsidence at a comparatively recent date. That area might have been occupied by a pre-aboriginal race, and the evidence all buried. But even then we should have expected traces of these people on the surrounding lands.

X.—THE LENGTH OF THE HUMAN OCCUPATION OF VICTORIA.

We have seen that the evidence of the aboriginal traditions gives no certain support to the view that man witnessed any of the volcanic eruptions in Victoria. Some of the traditions, moreover, tell against this view, as they affirm that man entered Victoria at a comparatively recent date.

¹ Mathew, J. : Eaglehawk and Crow, 1899, p. 19.

Mr. J. Parker tells me that the aborigines of the station on Mount Franklin had a legend that their ancestors entered Australia in a canoe, and that they travelled into Victoria from the west. Mr. Parker says that his father concluded that, according to the legends, the aborigines only arrived here 300 years before the British occupation. This evidence alone would not be worth much; but so far as I know, all the direct available evidence agrees with it. The oldest bed in which stone implements have been found need not be more than a few centuries old. The evidence is overwhelming that the implements occur only in the superficial layers or in beds such as river silts and sand dunes, which may accumulate with extreme rapidity.

Mr. Robert Etheridge has discussed the evidence of the age of man in New South Wales, and has concluded that the antiquity of man in that State also is unproven.¹

The negative evidence is equally striking in reference to Queensland. Mr. Etheridge asks "Has man a geological history in Queensland?" and says "that answer to this question may be given in one word—No! That is to say, so far as I am aware, no evidence of the presence of man, or of his works, has yet been discovered in any raised beach, cave or stratified deposit associated with the remains of extinct animals."²

The late Professor Tate, of South Australia, believed in the Pliocene age of Australian man; but his belief rested only on the doubtful assumption that man necessarily entered at the same date as the dingo.

The general evidence seems to me to point to the conclusion that the aborigines have resided in Victoria for but a short period. It is true that the division of the Victorian aborigines into so many distinct tribes at first suggests their long residence in the country, but this would only be so if the tribes had developed here. The aborigines, however, were divided into

¹ Etheridge, R., jun.: "Has Man a Geological History in Australia?" Proc. Linn. Soc. N.S.W., 1890, vol. v. (2nd ser.), Sydney, 1891, p. 259-266. Also "Contributions to a Catalogue of Works, Reports and Papers on the Anthropology, Ethnology and Geological History of the Australian and Tasmanian Aborigines." Dep. Mines. Mem. Geol. Surv. N.S.W., Palaeontology, No. 8, Pt. I., Sydney, 1890, p. 3. Full references to the literature of Aboriginal Stone Implements and Ovens will be found in this catalogue, of which Pt. II. was issued in 1891, and Pt. III. in 1895.

² Jack and Etheridge: "Geology of Queensland," vol. i., 1892, p. 622.

distinct tribes before their arrival in Victoria. They probably came from the north, but some entered Victoria by western, and others by eastern routes, and these two trains of immigrants met in Central Australia. There is no doubt, the authority of E. M. Curr for the view that some of the tribal divisions in Gippsland developed in Victoria; for he says that the Gippsland tribes were the last offshoot of the Australian race, and they had existed long enough to have developed considerable differences in language. But he gives no proof that the common ancestor of the Gippsland tribes lived in Gippsland. He supports his position by reference to the mussel shells on the banks of the Murray, buried a foot or two, or perhaps more, by silt.¹ But a single flood may deposit a couple of feet of silt.

The tribal distinctions only prove the antiquity of the tribes, and not their long residence in Victoria. That they have not been here for a great length of time is suggested by their comparatively small number, moreover, is consistent with their not having been here for a great length of time. No accurate census was ever made of them, but Brough Smyth, discussing the various estimates that had been previously made, concludes that the total number of aborigines in Victoria, at the first discovery of the country, was only about 3000;² Mitchell's estimate was lower, and Thomas's, the highest official estimate considered by Smyth, was 6000. E. S. Parker,³ the head of the aboriginal station at Mount Franklin, calculated the number in Victoria at 7500. These estimates may be too low, but I have heard of assemblies, in the Loddon district, attended by over 3000 aborigines, but the memory of my informant probably led him to exaggerate the number. When we remember that Thomas's census⁴ of the aborigines of Western Port (the Bunurong) and the Yarra tribe (the Warurong) in 1839 amounted only to 207 individuals; that Gray's census for the Portland Bay district, extending from the Glenelg to Colac, was only 599; that C. J. Tyers⁵ estimated the

1 Curr, E. M.: "The Australian Race," vol. i., 1886, pp. 206-7.

2 Smyth, Brough: "The Aborigines of Victoria," vol. i., London, 1878, p. 35.

3 Parker, E. S.: "The Aborigines of Australia." A Lecture, Melbourne, 1854, p. 14.

4 Archer, W. H.: "Statistical Register of Victoria," 1854, p. 230.

5 "Letters from Victorian Pioneers," edited by T. F. Bride, Melbourne, 1899, p. 79.

aboriginal population of Gippsland in 1843 as 1800; and that H. Jamieson,¹ of Mildura, considered that there were only 1500 in the country on both banks of the Murray from Swan Hill to the South Australian border, and for 500 miles up the course of the Darling; then Brough Smyth's estimate is not incredible, though it may be somewhat too low.

The limited distribution of the aborigines in Victoria is more significant. They only inhabited certain parts of Victoria; they lived in the country that was most easily occupied; and other districts, which would have yielded a fair supply of food, but were not easily found, were practically unentered. Mr. Kenyon tells me that there is no trace of their occupation in the forests of the Otway ranges; and in the higher parts of Gippsland they appear to have been only casual visitors. In the Mount Useful country occasional stone tomahawks have been found, apparently along the routes by which the aborigines traversed the country; for localities, which would have made excellent camps, appear to have been quite unvisited. According to Mr. Howitt, for example, Lake Karng was probably unknown to the aborigines until "about the time when Angus MacMillan discovered Gippsland" (*i.e.*, 1839).² Not only were various parts of the country unentered, but no special hill or forest tribes appear to have been developed, as there probably would have been had the country been long in the occupation of man. Mr. Howitt tells us that in the dense jungle that covers the country east of the Snowy River there "was a small tribe of 'no-man's-men,' called the Bidueli, who were neither Kurnai (of Eastern Victoria) or Muring (of New South Wales). They were probably broken men and fugitives from the surrounding tribes."³ Had Victoria been long occupied, there would probably have been such Adullamite clans in various parts of Victoria.

XI.—CONCLUSION.

A general survey of the evidence known to me, therefore, shows that, however ancient the Australian aborigines may be,

1 "Letters from Victorian Pioneers," edited by T. F. Bride, Melbourne, 1899, p. 272.

2 Howitt, A. W. : "Notes on Lake Karng." Quart. Rep. Min. Dep. Vic., Sept. 1891, p. 26

3 Howitt, A. W., and Fison, L.: "The Aborigines of Victoria." Handbook of Melbourne, for the use of Members of the Austral. Assoc. Adv. Sci., Melbourne, 1900, p. 46.

there is no evidence of the long occupation of Victoria by man. This conclusion is unexpected ; it is in opposition to preconceived anthropological opinion ; it is opposed, I fully admit, to what are apparently the obvious probabilities of the case. Nevertheless, the geological evidence suggests that man has not been resident in Victoria for any prolonged period. This conclusion is not likely to be accepted by anthropologists without the utmost reluctance ; but if it be wrong, abundant evidence to disprove it ought to be readily forthcoming. The main object of this paper is to call forth the evidence for the antiquity of man in Victoria, if such evidence there be.
